14.12.12

① a) /

b) $\lim_{x\to+\infty} \frac{2^x+x}{e^x} = \frac{+\infty}{+\infty} = 0$

② $\lim_{x\to 0} \frac{\sin x}{|x|}$ $\begin{cases} \lim_{x\to 0^-} \frac{\sin x}{-x} = \frac{0}{0} \approx \lim_{x\to 0} \frac{x}{-x} = -1 \\ \lim_{x\to 0^+} \frac{\sin x}{x} = \frac{0}{0} \approx \lim_{x\to 0} \frac{x}{x} = 1 \end{cases}$

$\lim_{x\to 1} \frac{2x+3}{|x|} = \lim_{x\to 1} \frac{2x+3}{x} = \frac{5}{1} = 5$

$\lim_{x\to -1} \frac{2x+3}{|x|} = \lim_{x\to -1} \frac{2x+3}{-x} = \frac{1}{1} = 1$

$\lim_{x\to 1} \frac{2x+3}{|x-1|} = \frac{5}{0}$ $\begin{cases} \lim_{x\to 1^-} \frac{2x+3}{-x+1} = \frac{5}{0^+} = +\infty \\ \lim_{x\to 1^+} \frac{2x+3}{x-1} = \frac{5}{0^+} = +\infty \end{cases}$

dic 14-13:04

$\lim_{x\to a} \frac{\sqrt{x}-\sqrt{a}}{x-a} = \frac{0}{0}$

$\lim_{x\to a} \frac{(\sqrt{x}-\sqrt{a})(\sqrt{x}+\sqrt{a})}{(x-a)(\sqrt{x}+\sqrt{a})}$

$= \lim_{x\to a} \frac{x-a}{(x-a)(\sqrt{x}+\sqrt{a})} = \frac{1}{\sqrt{a}+\sqrt{a}} = \frac{1}{2\sqrt{a}} = \frac{\sqrt{a}}{2a}$

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③

$\lim_{x\to\infty} \frac{\sqrt{x^2-2x}-(x-2)}{x-2}$

$\lim_{\substack{x\to+\infty \\ -\infty}} \frac{\sqrt{x^2-2x}-(x-2)}{x-2} = \frac{\infty-\infty}{\infty}$

$\lim_{x\to+\infty} \frac{x^2-2x-x^2+4x-4}{(x-2)(\sqrt{x^2-2x}+(x-2))} =$

$\lim_{x\to+\infty} \frac{2(x-2)}{(x-2)\,|\sqrt{x^2-2x}+(x-2)|} = \frac{2}{\infty} = 0$

$\lim_{x\to-\infty} \frac{\sqrt{x^2-2x}-(x-2)}{x-2} = \frac{+\infty+\infty}{-\infty} = \frac{\infty}{\infty}$

$\frac{\sqrt{1}+1}{-1} = -2$

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$\lim_{x\to 0} (2x+1)^{1/x} = 1^{1/0}$ (Ind)

$e^{\lim_{x\to 0} \frac{1}{x}(2x+1-1)} = e^{\lim_{x\to 0} \frac{2x}{x}} = e^2$

$\lim_{x\to 1/2} 3^{\frac{1}{2x-1}} = 3^{1/0}$

$\begin{cases} \lim_{x\to 1/2^-} f(x) = 3^{1/0^-} = 3^{-\infty} = 0 \\ \lim_{x\to 1/2^+} f(x) = 3^{1/0^+} = 3^{+\infty} = +\infty \end{cases}$ ∄

dic 14-13:26

(4) $\lim_{x\to+\infty}\left(\frac{x+3}{x}\right)^{ax}=e$

$\lim_{x\to+\infty}\left(\frac{x+3}{x}\right)^{ax}=\left(\frac{\infty}{\infty}\right)^{\infty}=1^{\infty}$

$e^{\lim_{x\to+\infty} ax\left(\frac{x+3}{x}-1\right)}$

$e^{\lim_{x\to+\infty} ax\frac{3}{x}}=e^{3a}=e$ $\quad 3a=1$

$a=1/3$

dic 14-13:27

CALCULO DE ASINT.

Polino $\longrightarrow$ Ramas inf

Cocientes : AV , ~~AH, AO, Ramas inf~~

Raices A.O $<\lim_{x\to+\infty}$ $\lim_{x\to-\infty}$

Exp : AV $\not<\lim_{x\to+\infty}$ $\lim_{x\to-\infty}$

log: A.V Dentro=0

A.H, A.O, Ramas inf

trig $\sin x, \cos x$ NADA

Resto - Cocientes

dic 14-13:30

$y=\frac{x^2+1}{x^2-2x}$

A.V $x^2-2x=0$ $\quad x(x-2)=0 \begin{cases} x=0 \\ x=2 \end{cases}$

$x=0$ $\begin{cases} \lim_{x\to0^-} f(x)=\frac{1}{0^+}=+\infty \\ \lim_{x\to0^+} f(x)=\frac{1}{0^-}=-\infty \end{cases}$

$x=2$ $\begin{cases} \lim_{x\to2^-} f(x)=\frac{5}{0^-}=-\infty \\ \lim_{x\to2^+} f(x)=\frac{5}{0^+}=+\infty \end{cases}$

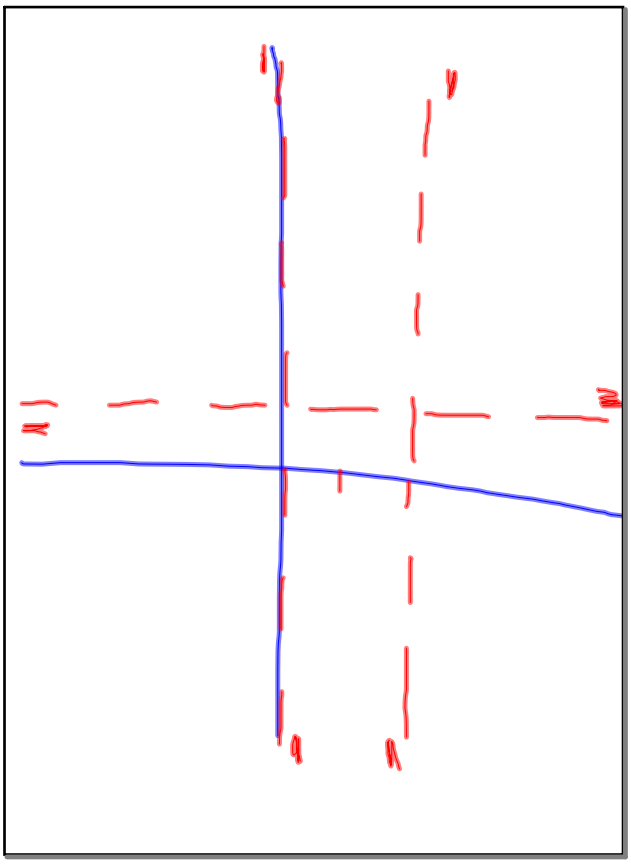
A.H $\lim_{x\to\infty}\frac{x^2+1}{x^2-2x}=\frac{\infty}{\infty-\infty}=\frac{\infty}{\infty}=\frac{1}{1}=1$

$y=1$

$f(100)=1'0205>1$

$f(-100)=0'98<1$

dic 14-13:33



dic 14-13:37

$$y = \frac{x^2-5x+7}{x-2}$$

dic 14-13:38

$y = \sqrt{x^2-4}$

A.O $y = mx+n$

$m = \lim_{x\to+\infty} \frac{\sqrt{x^2-4}}{x} = \frac{+\infty}{+\infty} \frac{\sqrt{1}}{1} = 1$

$n = \lim_{x\to+\infty} \sqrt{x^2-4} - x = \infty - \infty$ $\boxed{y = x}$

$\lim_{x\to\infty} \frac{x^2-4-x^2}{\sqrt{x^2-4}+x} = \frac{-4}{\infty} = 0$ $f(100) < \text{Asint}(+\infty)$

$m = \lim_{x\to-\infty} \frac{\sqrt{x^2-4}}{x} = \frac{\infty}{-\infty} \frac{\sqrt{1}}{-1} = -1$

$n = \lim_{x\to-\infty} \sqrt{x^2-4} + x = \infty - \infty$

$\lim_{x\to-\infty} \frac{x^2-4-x^2}{\sqrt{x^2-4}-x} = \frac{-4}{\infty+\infty} = 0$

$\boxed{y = -x}$ $f(-100) < \text{Asint}(-100)$

qq'cosa... < 100

dic 14-13:38

$y = 2^{-x+1}$

A.H

$\lim_{x\to+\infty} 2^{-x+1} = 2^{-\infty} = 0$ $\boxed{y=0}$

$f(100) > 0$

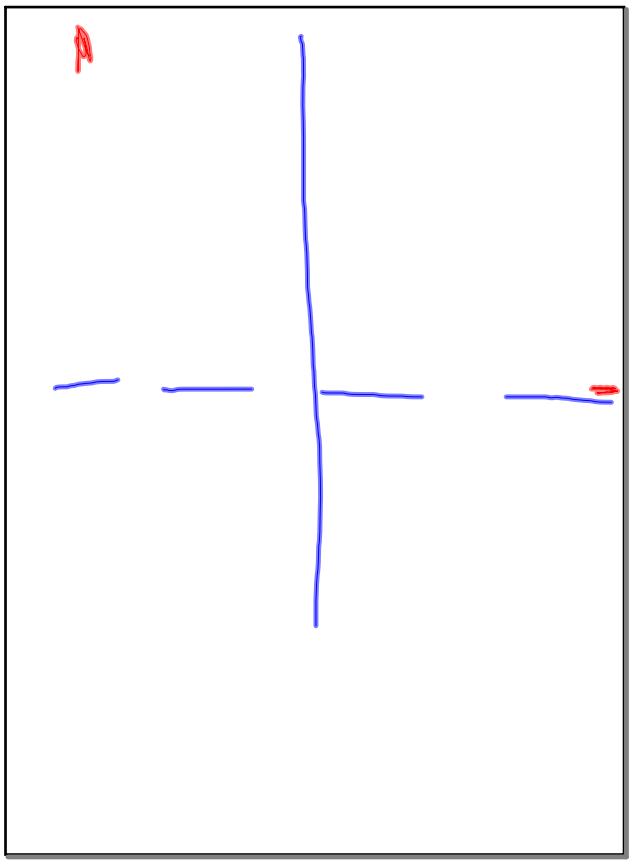
$\lim_{x\to-\infty} 2^{-x+1} = 2^{+\infty} = +\infty$

A.O $y = mx+n$

$m = \lim_{x\to-\infty} \frac{2^{-x+1}}{x} = \frac{(+\infty)}{+\infty} = +\infty$ ✗

Ramo sup $\lim_{x\to-\infty} 2^{-x+1} = +\infty$

dic 14-13:45



dic 14-13:47

$y = \log(x-2)$ $D=(2,+\infty)$

A.V $x-2=0$ $\boxed{x=2}$

$\lim_{x\to 2^-} \log(x-2) = \log(0^+) = -\infty$

$\lim_{x\to 2^+} \log(x-2) = \log(0^+) = -\infty$

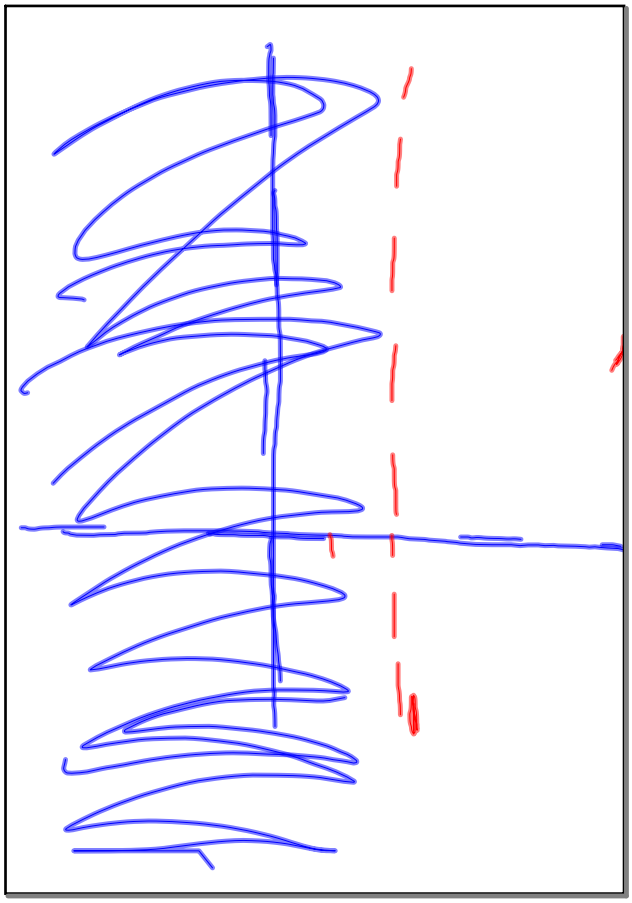
A.H $\lim_{x\to+\infty} \log(x-2) = +\infty$ ✗

A.O $y = mx+n$

$m = \lim_{x\to+\infty} \frac{\log(x-2)}{x} = \frac{\infty}{\infty} = 0$ ✗

Καμπύλη $\lim_{x\to+\infty} \log(x-2) = +\infty$

dic 14-13:48



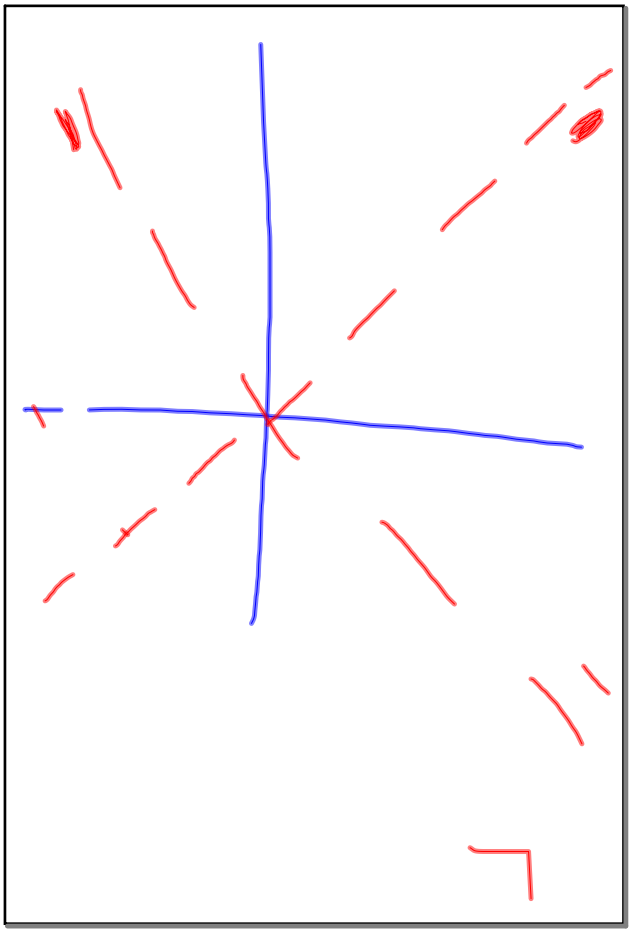
dic 14-13:51

$y = \sec(2x+\pi) = \frac{1}{\cos(2x+\pi)}$

dic 14-13:48

$y = \frac{x^2-1}{2x+2}$

dic 14-13:48



dic 14-13:43